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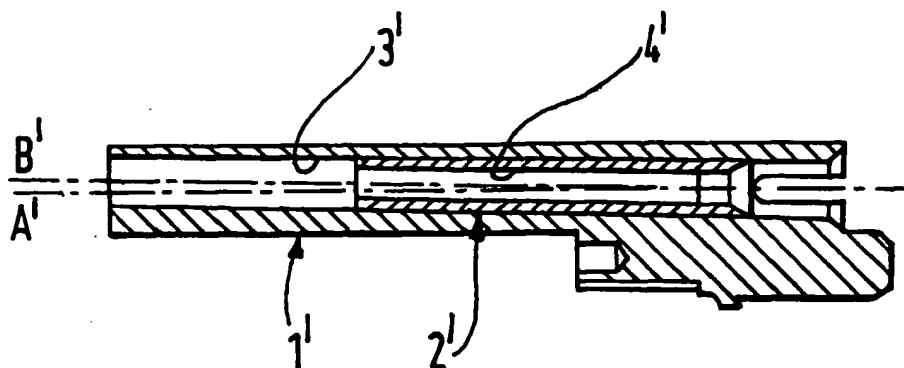
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- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **BARREL CONVERSION FOR A GUN**



(57) Abstract: A barrel conversion for a gun comprises; an external, peripheral surface suitably configured to fit and cycle the gun whose barrel (1') is to be converted and a stepped internal bore. The stepped internal bore comprises a first, rifled portion (4') of a first internal diameter extending from the chamber of the gun, and a second, clearance portion (3') of a second internal diameter, the clearance portion (3') extending from the rifled portion (4') to the exit of the barrel (1'), and the second internal diameter being larger than the first internal diameter.

BARREL CONVERSION FOR A GUN

This invention relates to gun barrels, in particular, but not strictly limited to pistol barrels, and provides a conversion for a gun barrel to accommodate shooting of low energy bullets.

It is known to modify guns originally designed for shooting live ammunition to enable the shooting of low energy bullets for training purposes. In the case of automatic pistols, it is known to replace the entire barrel with a specially adapted barrel having a bore angled at several degrees to the longitudinal axis of the barrel in a generally upwards direction when the gun is aimed. The bore may, simply, be adapted by insertion of a bored liner into the existing barrel.

The function of the angled barrel is two-fold. Firstly, there is a tendency for self loading pistols to move; as the slide of the automatic weapon moves backwards, the barrel tends to move downwards. The angle of the bore is designed to compensate for a loss of accuracy due to the downward movement of the barrel. Secondly, the angled bore compensates for a relatively slower trajectory of a low energy (i.e., slower travelling) bullet relative to live ammunition. Accuracy's of around 200mm over a 10,000mm range are achievable with these conversions, independent of shooter proficiency.

Whilst the angled barrel conversion goes some way to improving the accuracy of aim achievable with low energy bullets (relative to a standard pistol barrel), the correction angle used to offset the gun's movement as the slide recoils cannot account for differences in proficiency of a shooter. Also, the arrangement takes no account of sideways movement of the barrel which is also known to occur on firing of the gun.

The present invention aims to provide an improved barrel conversion which significantly increases the accuracy of the gun irrespective of shooter proficiency.

In accordance with the present invention, there is provided a barrel conversion for a gun comprising; an external, peripheral surface suitably configured to fit and cycle the gun whose barrel is to be converted and a stepped internal bore, the stepped internal bore comprising a first, rifled portion of a first internal diameter extending from the chamber of the gun, and a second, clearance portion of a second internal diameter, the clearance portion extending from the rifled portion to the exit of the barrel, and the second internal diameter being larger than the first internal diameter.

The external peripheral surface may be the external peripheral surface of the original barrel of the gun to be converted, or alternatively may be retrofitted. The converted barrel may have a different length to the original barrel of the gun to be converted. The rifled portion of the bore is designed according to conventional practices to accommodate the dimensions of the bullets to be fired from the converted barrel. The clearance portion of the bore has a diameter which, as a minimum, is sufficiently large to permit the bullet to be fired from the converted barrel to fly unrestricted during involuntary movement of the gun. Factors to be considered in selecting a suitable diameter may include, the size, speed and trajectory of the bullet to be fired and/or the length of the clearance portion, or of the barrel itself. As with the prior art arrangements, the conversion may be effected by insertion of a bored liner into the existing barrel. The bored liner may provide just the rifled portion of the stepped bore, the internal diameter of the remainder of the original barrel providing the clearance portion.

Where the gun to be converted is a semi-automatic pistol, for most pistols of this type, a rifled bore portion of a length between about 45mm to 80mm has

been found to be most effective, more preferably a length of between about 50mm to 75mm. A length of about 65mm has been found to provide an accuracy of around a 40mm diameter in a converted semi-automatic pistol.

It has been found that, by shortening the rifled portion of the barrel sufficiently, the flight time of a bullet fired from the converted gun, in the rifled portion of the barrel can be reduced to a period which is less than the time taken for any significant movement of the barrel to result from the firing or cycling of the weapon. Hence the bullet is in "free flow" when any involuntary movement of the barrel occurs and it's trajectory is not impaired or altered by such movement.

Optionally, the rifled bore portion of the barrel may be angled to the longitudinal axis of the barrel to compensate for the trajectory of slower bullets.

An embodiment of the invention will now be further described by way of example, with reference to the figures in which:

Figure 1 shows a prior art arrangement of a converted barrel of a pistol.

Figure 2 shows an embodiment of a barrel conversion according to the invention for a pistol similar to that referred to in relation to Figure 1.

As can be seen from Figure 1 a gun barrel 1 of known construction is modified for firing low energy training ammunition by the provision of a liner 2, within the bore 3 of the original barrel 1 of the gun (not shown) to be modified. The liner 2 extends the full length of the bore 3 of the barrel 1.

The liner 2 has its own longitudinal bore 4 which extends the length of the liner 2. The longitudinal bore 4 has an axis B' which is angled to the longitudinal axis A of the barrel 1 in a generally upwardly direction when the gun (not

shown) is aimed for shooting the training ammunition. The angle is typically about 6 to 8 degrees from the longitudinal axis A of the barrel 1.

As can be seen in Figure 2, a gun barrel 1' similar to that shown in Figure 1 is modified in accordance with one embodiment of the present invention. Inside the barrel 1', there is inserted a liner 2'. The liner 2' is significantly shorter in length than the bore 3' of the barrel 1', the liner 2' being approximately 55-60% of the length of the bore 3'. The liner 2' has a longitudinal bore 4' with an axis B' which, optionally, is angled to the longitudinal axis A' of the barrel 1' in a generally upwardly direction when the gun (not shown) is aimed for shooting the training ammunition.

CLAIMS

1. A barrel conversion for a gun comprising; an external, peripheral surface suitably configured to fit and cycle the gun whose barrel is to be converted and a stepped internal bore, the stepped internal bore comprising a first, rifled portion of a first internal diameter extending from the chamber of the gun, and a second, clearance portion of a second internal diameter, the clearance portion extending from the rifled portion to the exit of the barrel, and the second internal diameter being larger than the first internal diameter.
2. A barrel conversion for a gun as claimed in claim 1 wherein the external peripheral surface the external peripheral surface of the original barrel of the gun to be converted.
3. A barrel conversion as claimed in claim 1 wherein the external, peripheral surface forms part of a retro-fitted barrel.
4. A barrel conversion as claimed in any preceding claim wherein the gun to be converted is a semi-automatic pistol and the rifled bore portion has a length between about 45mm to 80mm
5. A barrel conversion as claimed in claim 4 wherein the rifled bore portion has a length of between about 50mm to 75mm.
6. barrel conversion as claimed in claim 4 or claim 5 wherein the rifled bore portion has a length of about 65mm.
7. A barrel conversion as claimed in any preceding claim wherein the rifled bore portion is angled to the longitudinal axis of the barrel.

8. A barrel conversion as claimed in any preceding claim wherein at least the rifled bore portion of the stepped bore is provided in the form of a bored liner inserted into an existing gun barrel.
9. A gun having a barrel conversion as claimed in any preceding claim.
10. A barrel conversion substantially as described herein and with reference to Figure 2.
11. A gun having a barrel conversion substantially as described herein and with reference to Figure 2.

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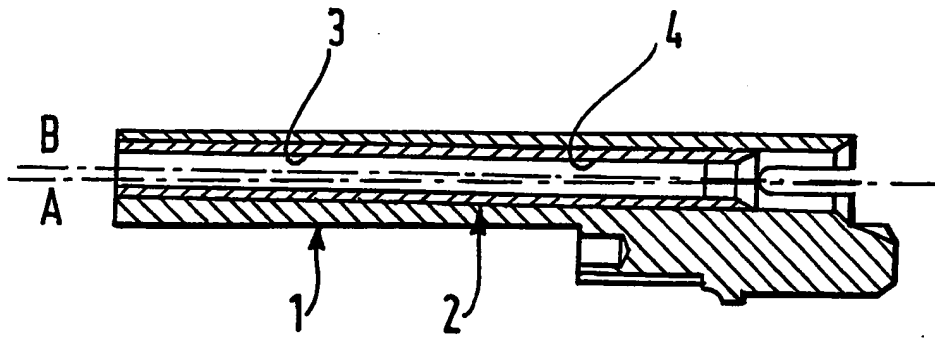


FIG.1.

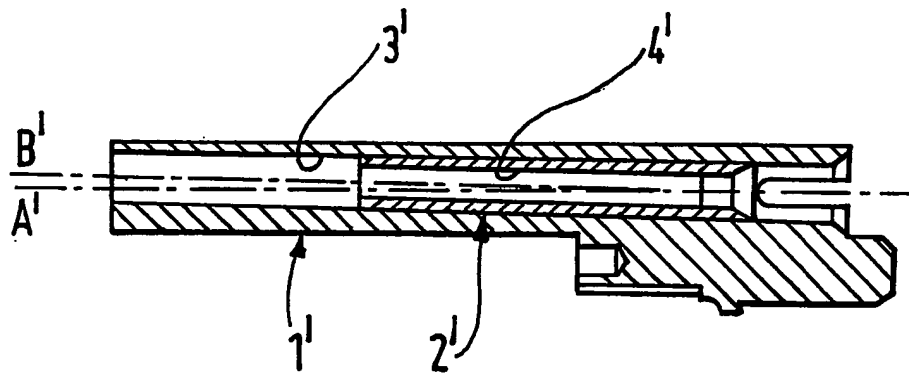


FIG.2.

INTERNATIONAL SEARCH REPORT

PCT/GB 02/04657

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 F41A21/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 F41A

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 459 774 A (FERRETTI SERGE) 17 July 1984 (1984-07-17) column 2, line 54 -column 4, line 37 figures 1,6	1-11
X	CH 99 973 A (BERNHARD MUELLER) 2 July 1923 (1923-07-02) claim 1 figures 1,2	1-11
X	GB 625 699 A (ANSALDO S A) 1 July 1949 (1949-07-01) page 2, line 7-64 figure 1	1-6,8-11
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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance

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X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

Z document member of the same patent family

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INTERNATIONAL SEARCH REPORT

PCT/GB 02/04657

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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DE 730030	C	06-01-1943	NONE	